VIRGIN ATLANTIC ECONOMY MEAL

CATEGORY:
6.4 INDUSTRIAL DESIGN - PRODUCT / SERVICE DESIGN & SUSTAINABILITY AWARD

CLIENT:
VIRGIN ATLANTIC AIRWAYS

CONSULTANCIES:
MAP & THE VIRGIN ATLANTIC IN-HOUSE DESIGN TEAM

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EXECUTIVE SUMMARY

Redesigning Virgin Atlantic's Economy meal to improve passenger experience and reduce carbon emissions.

In 2010 Virgin Atlantic asked **MAP** to re-evaluate their Economy airline meal service. The objective was to explore both the product and service design aspects of the in-flight meal and to generate concepts that would improve passenger experience and a rationale that could be presented to Virgin's business steering unit for potential investment.

MAP closely collaborated with Virgin Atlantic's in-house design team who were able to leverage their specialist knowledge of the airline industry. The dialogue between the two design teams resulted in a proposal to widen the ambition of the project to include a design that delivered weight savings and other efficiencies in addition to service improvements.

MAP's design proposal reduced the meal tray size by 1/3 and utilised new materials to create efficiencies, combined with a strong design language and service enhancements, which offer the passenger a better overall experience. The combination of service design and logistical improvements was a compelling case for the business unit and the design attracted investment to become a key element of Virgin's £100 million investment program for in-flight services delivered over the last three years.

Over a 30 month period since introducing the new design, there has been a 9% improvement in customer satisfaction and a weight saving of 129 kilograms per aircraft, which equates to a potential fuel saving of 762 tonnes per year.

PROJECT OVERVIEW

BRIEF

The brief was to create a "new meal experience" to differentiate and add value to the customer journey as a key part of the on board customer experience.

Success criteria for the project were defined as follows:

- Create a design that would attract investment from the business.
- Improve cabin crew's ability to better serve passengers.
- Improve passenger experience of the meal (measured by surveys).

In addition, MAP and the Virgin in-house design team decided to widen the ambition of the project to try and deliver:

- A weight saving over the previous design.
- Use more sustainable materials.
- Generate less waste.

SERVICE DESCRIPTION

It was important that the design of the new meal service was aligned with the existing Economy class brand values and adhered to strict logistical constraints such as fitting on the passenger tray table, fitting within the delivery cart and stacking within a set envelope for delivery and storage.

The elements of the meal outlined in the brief were:

- Re-usable delivery mechanism, e.g. tray
- A tray liner – if needed
- Main meal container
- Dessert/salad bowl
- Coffee cup
- Cutlery pack
- Napkin

PROJECT OVERVIEW

MARKET

The Economy meal design in use in 2011 when the project started had not had an overhaul in 15 years and was being delivered to approximately 4.5 million passengers a year. The opportunity was for Virgin Atlantic to stand out in the typically poor market place where customer expectation is low.

CHALLENGES

The design had to satisfy multiple stakeholders including airport kitchens, cabin crew, the in-house design team, the business unit, plus meet relevant airline legislation.

Existing Economy meal service

PROJECT OVERVIEW

LAUNCH DATE

The new Economy meal was introduced in Q3 2011. Various other parallel service elements including items in Upper Class (Business Class) were introduced in 2011 and 2012.

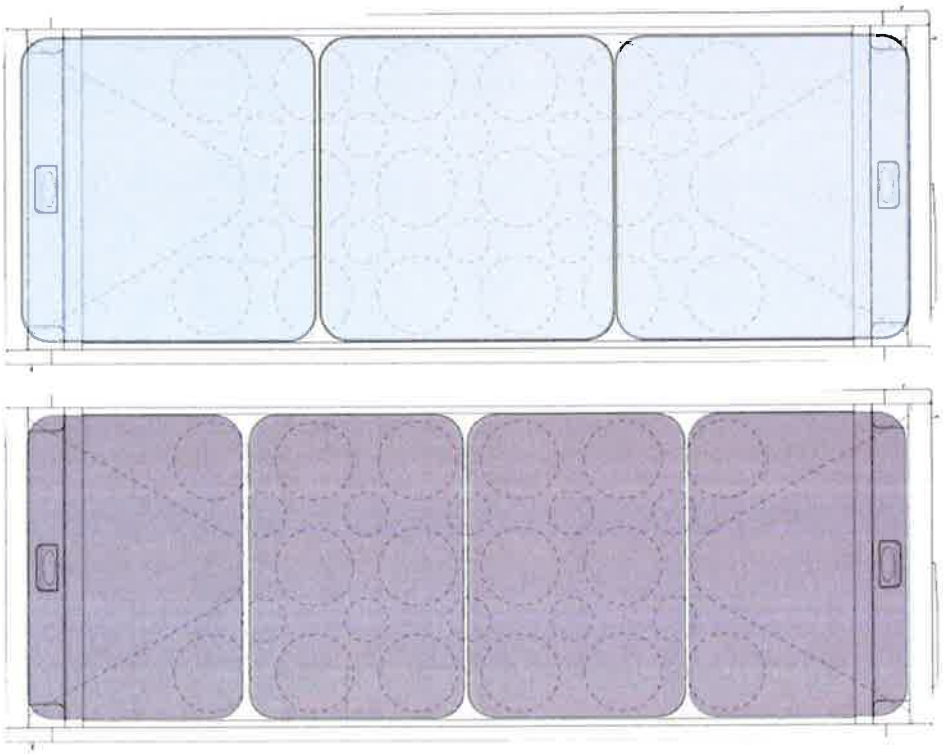
New Economy meal service

DESIGN SOLUTION

SERVICE DESIGN AND LOGISTICS

Virgin Atlantic's in-house design team proposed an improved service idea, where dessert plus tea or coffee were served as a separate course after the main meal, more akin to eating in a restaurant. This approach improved passenger experience but also created extra space on the meal tray.

MAP were able to create a tray design that was 30% smaller. This meant the meals could be arranged in the meal trolly in rows of four instead of three. Several trollies could be removed across a whole aircraft saving weight. The new trays include a lip so that they hook together; when the cabin crew pulls one meal out, the next tray slides forward as well, so they can just grab them instead of having to reach into the back of the cart.



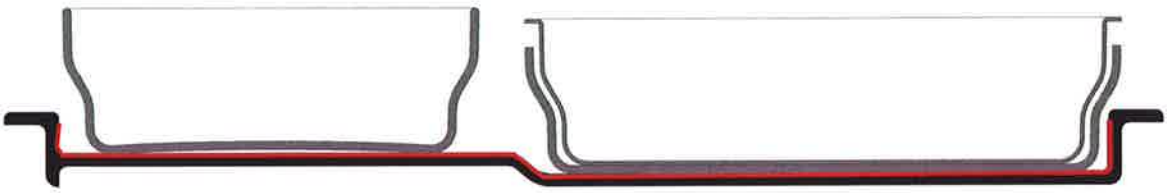
Existing tray
in service trolly

New smaller tray
in service trolly

DESIGN SOLUTION

CONSISTENT MEAL LAYOUT

MAP discovered that when an airline meal tray leaves the kitchen, it looks tidy but by the time it reaches the passenger, it's messy due to the movement of the aircraft. To prevent turbulence from moving the meal components the design team created different tiers on the tray to separate the different elements. A soft plastic non-slip inner was co-moulded into the tray to provide colour and stop movement. This meant the traditional paper liner could be removed, saving weight and reducing waste.



Drawing and image showing tray levels and co-moulded inner surface

DESIGN SOLUTION

ATTENTION TO DETAIL

MAP designed every element of the meal tray to ensure a consistently improved passenger experience using a fresh choice of colour and materials consistent with Virgin's brand. The design team created a new main meal container, a new salad bowl which was reusable rather than disposable, a new iconic cutlery design and a drinking glass.

New meal tray with cutlery and menu card

DESIGN SOLUTION

ENVIRONMENTAL ANALYSIS

To ensure the effectiveness of measures taken to reduce weight and use more efficient materials, MAP and the Virgin in-house design team worked with specialist environmental agency Giraffe Innovation Ltd. Giraffe was engaged at the early stages of the design process and undertook environmental modelling of all the Economy and Business Class meal items to make sure the design team were supported with robust information to make right decisions.

There was a perception that the only environmental design factor worth considering was weight. However Giraffe discovered there were significant opportunities in using alternative materials to reduce the overall lifecycle footprint of various meal elements. Giraffe used lifecycle inventory data software and their own scientific calculations to model all the meal items. Their collaboration wasn't just about reducing emissions but doing so within the commercial context of cost and obviously supporting the Virgin Atlantic Brand.

Lifecycle modelling, which influenced the design included:
- Material type, density, manufacturing process.
- Recycled plastic (rPlastic) options, and recyclability.
- Sector life - indicative routes.
- Disposal versus reusable items, lifecycle & breakeven cost.
- End of life - recyclability.

RESULTS

PASSENGER EXPERIENCE

The design met its objectives for improved passenger experience. In surveys carried out every quarter by Virgin, passengers are asked to rate the crew and service **the percentage of passengers who rate the service as excellent increased by 9%** over a 20 month period since the launch of the new Economy meal service.

	January	April	July	October
2011			37%	37%
2012	39%	40%	40%	40%
2013	40%	44%	44%	45%
2014	46%			

Figures of passengers rating service as "excellent", as provided by Virgin Atlantic

CLIENT FEEDBACK

"The design of both product and service had the customer at heart. The new products offer a perfect backdrop to show-off the service, whilst being carefully considered to effectively reduce weight on-board. The products enabled the service to be enhanced to provide much more interaction with customers, delivering a fresh, memorable service and customer experience."

Jeremy Brown, Senior Design Manager - Customer Experience, VAA

RESULTS

WEIGHT

The design met its objectives for weight saving. A combination of weight saving measures integrated into the design including reduction of the tray size and removal of the paper liner equate to an **average weight saving of 129 Kg per aircraft compared to the previous design, yielding a potential fuel saving per year of 176 tonnes per aircraft, which is a 4% reduction in CO2.**

Figures are provided by Virgin Atlantic

COST BENEFITS

The complexity of airline travel means it is hard to estimate the potential cost benefits of any single design change. In June 2014 Fast Company journalist John Brownlee estimated the cost benefits of the new design to be worth millions of dollars per year to Virgin Atlantic. A figure often referenced in the analysis of airline weight saving is that of Norwegian Economist Bharat P Bhatta who suggests the reduction of 1 kilo in weight of a plane will result in fuel savings worth $3000 / £1760 per year.

Using the figure of £1,760 savings per reduced kilo per plane per year, the new design saves Virgin £8,627,520 per year across its fleet of 38 aircraft.

Figures are from June 2014 Fast Company Magazine article and March 2013 article in the Journal of Revenue & Pricing Management

RESULTS

SUSTAINABILITY

The design met its objectives for using more sustainable materials and less waste. Specialist environmental agency Giraffe analysed the new design to optimise the weight savings and made recommendations on more sustainable material choices. For example **changing the lids on the meal dishes from PET to recycled PET is 65% more greenhouse gas efficient and changing the meal tray material from Acrylic to ABS is 45% more greenhouse gas efficient.**

Figures are from Giraffe, referenced in Virgin Atlantic's 2012 sustainability report

The addition of the non-slip surface on the meal tray and removal of the paper liner together with changing the salad bowl from disposable to re-usable helped Virgin to reduce the total waste on board and increase the amount of recycled waste. **Compared to the base year of 2009 total waste was reduced by 10% and recycling increased by 52%.**

	2009	2010	2011	2012
Waste generated	2,936	2,950	3,214	2,677
Waste recycled	109	58	84	166

Figures in Tonnes from airline caterers, referenced in Virgin Atlantic's 2013 sustainability report

RESULTS

PRESS COVERAGE

The new design was widely praised in the press for delivering a better service, more attractive design and reduced environmental footprint.

"Virgin Atlantic reminds us that even when measured in grams, the dividends of good design can pay off big."

John Brownlee, *Fast Company Magazine,* April 2014

"Transparent purple cutlery is the most conspicuous design element in the sleek new set, but the biggest benefits come from space efficiency. Virgin's trays have been redesigned with a more compact footprint that allow them to be packed more tightly into a standard service trolley, reducing storage requirements by approximately 25 percent."

Joseph Flaherty, *Wired Magazine,* June 2014

New meal tray on board

INFLUENCING FACTORS

CHALLENGE ANALYSING BENEFITS OF A NEW DESIGN

An airline meal service consists of a number of different elements and it is difficult to isolate the benefits of any single design change. Airport kitchens where meals are prepared are shared by many airlines so in analysing things like the waste produced or materials recycled the figures are estimated as a percentage of total waste weighed to the number of meals produced for each airline.

The complexity of airline routing, the use of different aircraft types and proportion of different travel classes means that the data that has been calculated represents a generic figure across Virgin's fleet. Commercial sensitivity also means that Virgin are not able to release some of the detailed figures behind the generic calculations. However the figures have been audited by specialist environmental consultancy Giraffe.

"The 129kg figure is a generic figure, as our fleet obviously differs with Economy capacity throughout the aircraft types – Airbus vs Boeing, leisure vs business routes etc. We worked closely with 'Giraffe', a sustainability agency, who gave some great advice and analysis. Suffice to say the overall weight savings and fuel efficiencies clearly have a considerable effect on commercial numbers to the business."

Jeremy Brown, Senior Design Manager - Customer Experience, VAA

RESEARCH SOURCES

INDEPENDENT EXPERT ANALYSIS BY GIRAFFE

Prof. Rob Holdway B.A (Hons), M.A FRSA,
Mark Dowling BSc (Hons), AIEMA
Tim Palmer Fry BSc(Hons), MSc
http://www.giraffeinnovation.com

FAST COMPANY MAGAZINE ARTICLE

John Brownlee
http://www.fastcodesign.com/3029856/terminal-velocity/how-a-redesigned-meal-tray-is-saving-virgin-atlantic-millions

JOURNAL OF REVENUE & PRICING MANAGEMENT ARTICLE

Dr Bharat P Bhatta
http://www.palgrave-journals.com/rpm/journal/v12/n2/full/rpm201247a.html

VIRGIN SUSTAINABILITY REPORTS

http://www.virgin-atlantic.com/corporate/images/newsustainabilityreport.pdf

http://www.virgin-atlantic.com/content/dam/VAA/Documents/sustainabilitypdf/Sustainability_Report_2012.pdf

http://www.virgin-atlantic.com/content/dam/VAA/Documents/sustainabilitypdf/Virgin-Atlantic-Change-is-in-the-Air-Sustainability-Report-2013.pdf

VIRGIN CUSTOMER SERVICE SURVEY

Provided by: Jeremy Brown, Senior Design Manager - Customer Experience, VAA

WIRED MAGAZINE

http://www.wired.com/2014/06/these-ingenious-new-meal-trays-will-save-virgin-millions-a-year/

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